11Mbps Wireless LAN Card

User's Manual

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About This User's Manual

This manual was written for two models:

- PCMCIA Wireless LAN Card
- USB Wireless LAN Card

For brevity, throughout this manual **Wireless LAN Card** is used to indicate both models. Also, the following terms/abbreviations are used interchangeably:

- Access Point-AP
- Wireless LAN-WLAN
- Ethernet network-LAN-network

This User's Manual contains information on how to install and configure your Wireless LAN Card. From now on, we will guide you through the correct configuration steps to get your device up and run.

Chapter 1 Introduction

This Wireless LAN Card is an IEEE 802.11b Wireless LAN PCMCIA/USB adapter. It allows your computer to connect to a wireless network and to share resources, such as files or printers without being bound to the network wires. Operating in 2.4GHz Direct Sequence Spread Spectrum (DSSS) radio transmission, the Wireless LAN Card transfers data at speeds up to 11Mbps. Both Ad-Hoc and Infrastructure mode are supported. For network security concern, 64/128-bit Wired Equivalent Protection (WEP) algorithm is used. In addition, its standard compliance ensures that it can communicate with any 802.11b networks.

Wireless LAN Basics

This section conations some Wireless LAN basics to help you better understand how the product work together to create a wireless network.

Local Area Network (LAN)

Simply put, a LAN is a network that exists in a relatively limited area. A network is two or more computers connected together sharing files and peripheral devices such as printers.

The Wireless LAN Card allows you to interact with other computers without having to run cables normally associated with networks. This lets you move your computer around while staying connected to your network.

There are two ways to use the Wireless LAN Card. One way is to connect directly to one or more Wireless LAN Card equipped computers, forming an Ad Hoc wireless network. The second way is to connect to an Access Point that gives you access to an existing wired LAN, forming an Infrastructure wireless network.

Wireless Network Topologies

The 802.11 standard defines two wireless modes: Infrastructure mode and Ad Hoc mode.

Ad Hoc Network

An Ad Hoc network offers peer to peer connections between wireless stations that are in range of each other. The stations communicate directly with each other without using an Access Point or any connection to a wired network. This mode is useful for quickly and easily setting up a wireless network anywhere that a wireless infrastructure does not exist or is not required for services. In an Ad Hoc network, all wireless stations must have the same SSID, channel and WEP keys (if enabled) to communicate with each other.

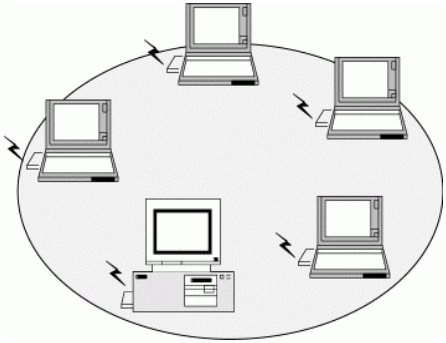


Figure 1-1 Ad-Hoc Mode

Infrastructure Network

An Infrastructure wireless network consists of at least one Access Point connected to the wired network infrastructure and a set of wireless end stations. The AP acts as a gateway, linking the wireless network to a wired LAN. As a result, wireless stations have access to all of the features of your wired LAN including e-mail, Internet, network printers and files server access.

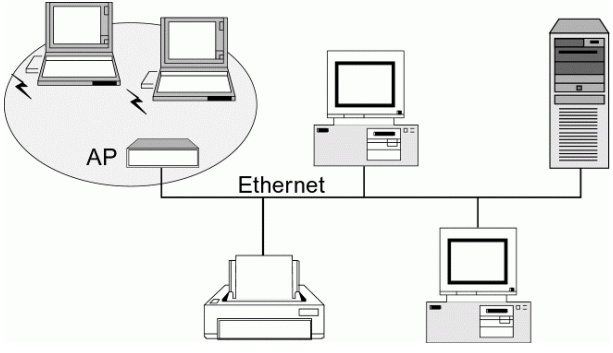


Figure 1-2 Infrastructure Mode

Roaming Between Multiple Access Points

For large environments, multiple Access Points can be implemented to extend the wireless service coverage area for seamless wireless access. It allows wireless clients to roam from one AP to another while maintaining the wireless connectivity at all times. A wireless client wandering across multiple APs will automatically change the operating radio frequency as required.

In a roaming network, all APs and wireless clients must have the same Service Set Identity (SSID) and security setting (if enabled). Alternatively the mobile station may use an SSID of "any" to associate with any available AP, regardless of the AP's SSID. Roaming among different Access Points is controlled automatically to maintain the wireless connectivity at all times.

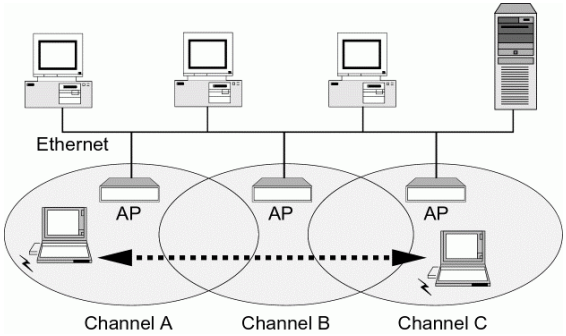


Figure 1-3 Roaming Across Multiple Access Points

Chapter 2 Installing the Wireless LAN Card

This chapter describes the installation process for the driver and software for the Wireless LAN Card. Proper driver installation is to allow the device to operate on your host computer while the utility software, Wireless Client Manager, is to help you configure and monitor your Wireless LAN Card.

System Requirements

To use the Wireless LAN Card, your computer must meet the following minimum requirements:

- Windows 98(SE)/Me/2000/XP
- 32 MB of RAM, additional memory recommended
- Standard **PCMCIA** slot/**USB** port
- UL listed I.T.E. computers.

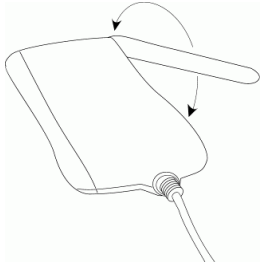
Wireless LAN Card Status LEDs

The two LEDs on the Wireless LAN Card indicate connection status and data transfer operation status described as below:

LED	Color	State	Description
Power	Red	On	The adapter is plugged into the **PCMCIA** slot/**USB** port of your computer.
Activity	Green	Blinking	Transmission mode. The faster the LED blinks, the higher the data exchange rate.

The Antenna on the Wireless LAN Card (Only for Wireless LAN USB Card)

The USB adapter comes with one powerful antenna. You can rotate the antenna from 0 to 180 degrees to adjust its range and the connection quality.



Caution: Do not rotate the antenna more than 180 degrees, otherwise permanent damage may be caused.

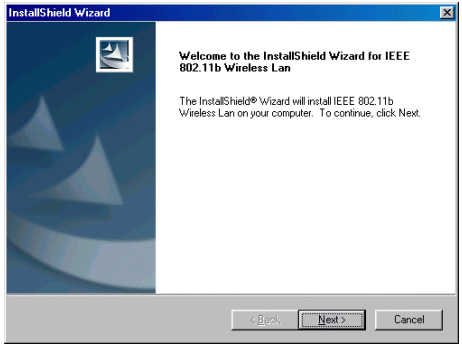
Software and Hardware Installation

Caution: Do not connect the Wireless LAN Card device to your computer before installing its software. If this happens, the Windows PnP function will detect the **PCMCIA/USB** device and issue a dialog box requesting its driver. Click **Cancel** to quit the wizard and unplug the Wireless LAN Card.

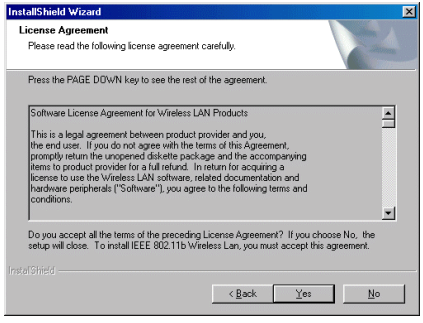
Follow these steps to install the Wireless LAN Card:

1. Close all Windows programs that are running.

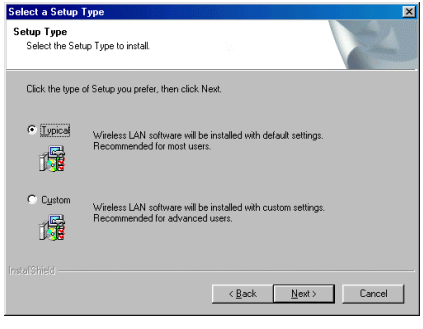
2. Insert the provided Software Utility CD into your CD-ROM drive and select **Utility&Driver**. Or, run **Setup.exe** from **D**:**Utility&Driver** folder of the Software Utility CD where **D** is the drive letter. When the welcome screen pops up, click **Next**.


InstallShield Wizard
Welcome to the InstallShield Wizard for IEEE 802.11b Wireless Lan
The InstallShield® Wizard will install IEEE 802.11b Wireless Lan on your computer. To continue, click Next.
< Back
Next >
Cancel

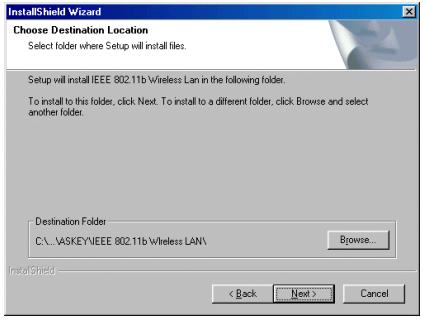
3. When the **License Agreement** screen appears, click **Yes**.


InstallShield Wizard
License Agreement
Please read the following license agreement carefully.
Press the PAGE DOWN key to see the rest of the agreement.
Software License Agreement for Wireless LAN Products
This is a legal agreement between product provider and you, the end user. If you do not agree with the terms of this Agreement, promptly return the unopened diskette package and the accompanying items to product provider for a full refund. In return for acquiring a license to use the Wireless LAN software, related documentation and hardware peripherals ("Software"), you agree to the following terms and conditions.
Do you accept all the terms of the preceding License Agreement? If you choose No, the setup will close. To install IEEE 802.11b Wireless Lan, you must accept this agreement.
InstallShield
< Back
Yes
No

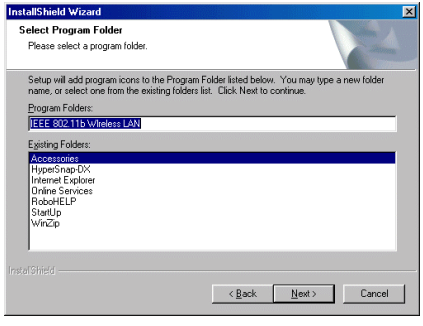
4. For quick installation, select **Typical** and click **Next**. Then skip to step 11.
For custom installation (to select the parameters that you would like to use), select **Custom** and click **Next** to go to next step.


Select a Setup Type
Setup Type
Select the Setup Type to install.
Click the type of Setup you prefer, then click Next.
Typical
Wireless LAN software will be installed with default settings.
Recommended for most users.
Custom
Wireless LAN software will be installed with custom settings.
Recommended for advanced users.
InstallShield
< Back
Next >
Cancel

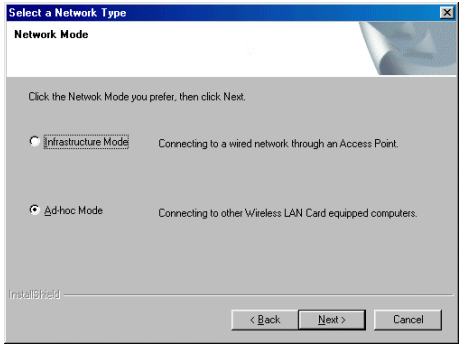
5. To install the software to the default destination folder, click **Next**. If you are to install the software to a different folder, click **Browse** to select another folder, and then click **Next**.


InstallShield Wizard
Choose Destination Location
Select folder where Setup will install files.
Setup will install IEEE 802.11b Wireless Lan in the following folder.
To install to this folder, click Next. To install to a different folder, click Browse and select another folder.
Destination Folder
C:\...\ASKEY\IEEE 802.11b Wireless LAN\
Browse...
InstallShield
< Back
Next >
Cancel

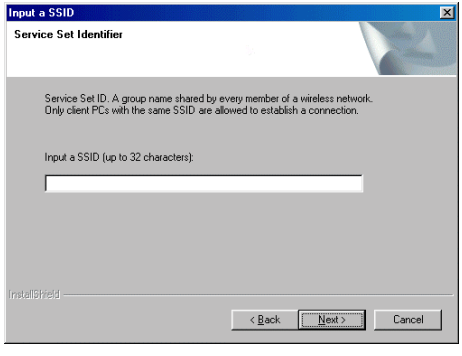
6. If required, you may type a new folder name for the program icons to be added to the Program Folder. Then click **Next** to continue.



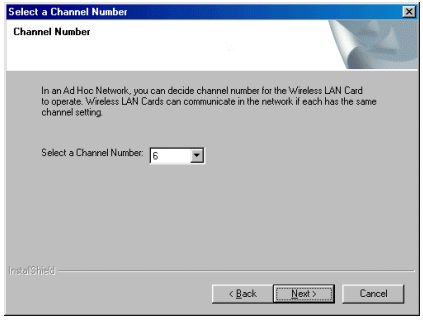
7. Select the network type you prefer and then click **Next**.


Select a Network Type
Network Mode
Click the Network Mode you prefer, then click Next.
Infrastructure Mode
Connecting to a wired network through an Access Point.
Ad-hoc Mode
Connecting to other Wireless LAN Card equipped computers.
InstallShield
< Back
Next >
Cancel

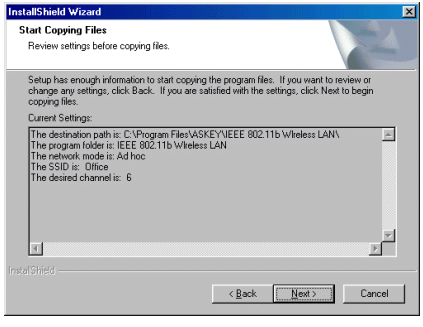
8. Enter the SSID of the wireless network you wish to connect to. Then click **Next**.


Input a SSID
Service Set Identifier
Service Set ID. A group name shared by every member of a wireless network.
Only client PCs with the same SSID are allowed to establish a connection.
Input a SSID (up to 32 characters):
InstallShield
< Back
Next >
Cancel

9. This step is for Ad Hoc network type only. For Ad Hoc mode network, specify a channel number for the Wireless LAN Card.

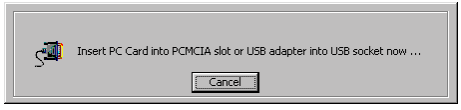

Select a Channel Number
Channel Number
In an Ad Hoc Network, you can decide channel number for the Wireless LAN Card to operate. Wireless LAN Cards can communicate in the network if each has the same channel setting.
Select a Channel Number:
6
InstallShield
< Back
Next >
Cancel

10. If the settings listed are correct, click **Next**. Otherwise, click **Back** to modify your settings.


InstallShield Wizard
Start Copying Files
Review settings before copying files.
Setup has enough information to start copying the program files. If you want to review or change any settings, click Back. If you are satisfied with the settings, click Next to begin copying files.
Current Settings:
The destination path is: C:\Program Files\ASKEY\IEEE 802.11b Wireless LAN\
The program folder is: IEEE 802.11b Wireless LAN
The network mode is: Ad hoc
The SSID is: Office
The desired channel is: 6
InstallShield
< Back
Next >
Cancel

The power LED on the Wireless LAN Card will light when the Wireless LAN Card is connected to your computer.

11. Later, the following screen will pop up to ask you to insert your wireless card into the PCMCIA slot / USB port of your computer. Please do as the dialog request.



12. Subject to your Windows OS, the following situation may occur:

For Windows 98(SE)

You will be prompted for Windows 98 CD. Click **OK**. Then enter the path to your Windows 98(SE) CD (if Windows 98 CD files are not in you host computer, you need to insert the CD into your CD-ROM at this step) and click **OK**.

For Windows 2000

If you are prompted with the **Digital Signature not Found** alarm message, just click **Yes** to continue with the installation.

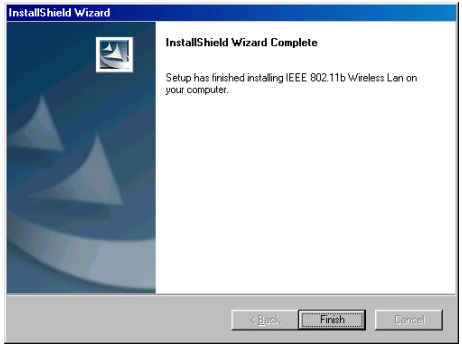
For Windows XP

a. Upon hardware detection, Windows OS will pop up a dialog requesting for driver. Select **Install the software automatically** and click **Next**.

b. If Windows logo compatibility message appears, click **Continue Anyway** to proceed with the installation.

c. Click **Finish**.

13. Click **Finish** to complete the installation.



Now you are done with the installation procedure. Proceed to next chapter to configure or fine-tune your Wireless LAN Card settings.

Note: If you need to set up the TCP/IP properties of your Wireless LAN Card, refer to "Appendix C Setting Up TCP/IP" for details.

Chapter 3 Wireless LAN Monitor Utility

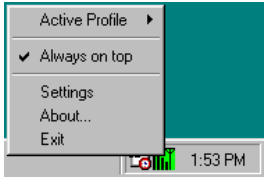
The configuration of the Wireless LAN Card is done through the **Wireless LAN Monitor Utility**. This utility also includes a number of tools to display current statistics and status information pertaining to your Wireless LAN Card. See the appropriate subsection as required.

Accessing the Wireless LAN Monitor Utility

The **Wireless LAN Monitor Utility** is launched automatically with its icon located on the system tray. If the utility is not launched, manually start the monitor by selecting **Start** > **Programs > IEEE 802.11b Wireless LAN** > **IEEE 802.11b Wireless LAN Utility**. You can access the **Wireless LAN Monitor Utility** by any of the following methods:

- Double-click the **Wireless LAN Monitor Utility** tray icon on the system tray

- Right-click the tray icon and select **Settings** from the context menu.



Note to Windows XP Users

Under Windows XP, if you are launching the **Wireless LAN Monitor Utility** for the first time, you will find that you are only allowed to view the statistics and version information. Configuration fields and buttons are dimmed. This is because that the Windows XP built-in **Wireless Zero Configuration Utility** overrides the management of the **Wireless LAN Monitor Utility**.

If you want to disable the Windows XP **Wireless Zero Configuration Utility** and have your device managed by the **Wireless LAN Monitor Utility**, proceed as follows:

1. Double-click the Windows XP wireless tray icon and then click **Advanced** (or **Properties**) > **Wireless Networks**.

2. On the **Wireless Networks** tab, uncheck the **Use Windows to configure my wireless network settings** box and click **OK**.

If you need to revert back to using Windows XP **Wireless Zero Configuration Utility**, just go to the **Wireless Networks** tab and check the **Use Windows to configure my wireless network settings** box and click **OK**.

Status

The **Status** tab displays the current status of your Wireless LAN Card. It also allows you to re-configure the Wireless LAN Card setting. Even though you might have configured the settings during the driver and utility installation, it is possible that you want to change your operating mode between Infrastructure or Ad-Hoc mode and fine-tune other settings.

You can connect your computer to a network in one of the following two ways. Refer to sequential sections for configuration:

Ad Hoc	Connecting to other Wireless LAN Card equipped computers, forming a wireless network.
Infrastructure	Connecting to a wired/wireless network through an Access Point.

Basic Configuration for Ad Hoc Network

1. In the taskbar, double-click the **Wireless LAN Monitor Utility** icon to display the **Wireless LAN Monitor Utility** dialog box. Make sure to select the desired profile from the **Current Profile** list.
2. Click the **Status** tab and then click **Change** to make the setting items configurable.
3. From the **Operating Mode** list, select **Ad-Hoc**.
4. From the **Channel** list, select the channel number which you want to use.
5. In the **SSID** field, type the Service Set ID (SSID) of the Wireless LAN group. A network name is **mandatory** for Ad Hoc mode. All wireless clients must use the same SSID in order to communicate with each other.
6. From the **Tx Rate** list, select the transmit rate to use. If **Auto** is selected, the wireless adapter will adaptively adjust its data rate from 11 Mbps to 5.5, 2 or 1 Mbps as the signal strength warrants.
7. From the **Radio** list, select **On** to enable the radio signal.
8. Click **Submit**.
9. Click **Exit** if you wish to exit the utility.

If WEP encryption is enabled in the Ad Hoc network you are going to connect to, proceed to configure the **Encryption** tab as described in the “Encryption” section.

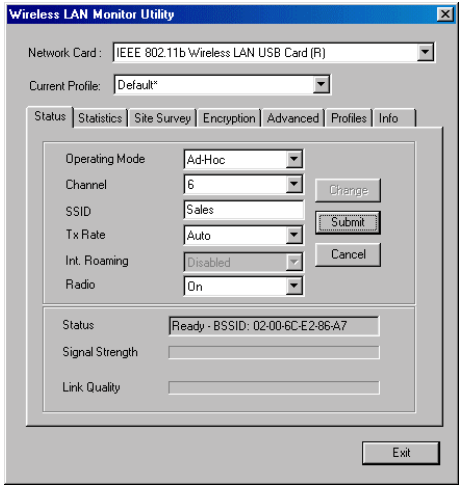


Figure 3-1 Ad-Hoc Mode Configuration

Basic Configuration for Infrastructure Network

1. In the taskbar, double-click the wireless tray icon to display the **Wireless LAN Monitor Utility** dialog box. Make sure to select the desired profile from the **Current Profile** list.
2. Click the **Status** tab and then click **Change** to make the setting items configurable.
3. From the **Operating Mode** list, select **Infrastructure**.
4. In the **SSID** field, type the SSID of the Access Point you are going to connect to. The wireless client must use the same SSID as the Access Point in order to communicate with other computers via the Access Point.

   Note that under Infrastructure mode, if the **SSID** field is left blank or filled in with the special SSID name "**any**", your Wireless LAN Card will connect to the first compatible and "open" AP with the best signal strength within the connection range. It allows your Wireless LAN Card to wander across networks with different SSID.
5. From the **Tx Rate** list, select the transmit rate to use. If **Auto** is selected, the wireless adapter will adaptively adjust its data rate from 11 Mbps to 5.5, 2 or 1 Mbps as the signal strength warrants.
6. From the **Int. Roaming** list, select whether to enable the roaming feature.
7. From the **Radio** list, select **On** to enable the radio signal.
8. Click **Submit**.

9. Click **Exit** if you wish to exit the utility.

If WEP encryption is enabled in the Infrastructure network you are going to connect to, proceed to configure the **Encryption** tab as described in the "Encryption" section.

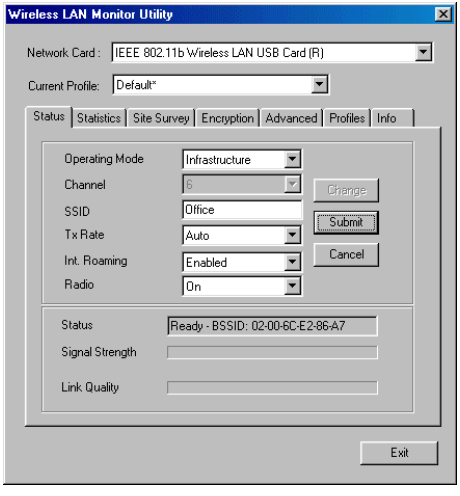


Figure 3-2 Infrastructure Mode Configuration

Checking Link Quality (Infrastructure Mode Only)

To check the link quality of the connection in Infrastructure mode, double-click the **Wireless LAN Monitor** icon on the taskbar to display the **Wireless LAN Monitor Utility** dialog box. Then click the **Status** tab. The connection status is shown at the bottom of the dialog box.

Status: Displays the BSSID of the Access Point to which your Wireless LAN Card is associated. If may also diplay the current association status, such as scanning or authenticating.

Signal Strength: Displayed as percentages using active progress indicators that change as the network radio signal fluctuates.

Link Quality: Link Quality categories are defined as follows:

Link Quality	Range(%)
Poor	0-29
Fair	30-59
Good	60-89
Excellent	90-100

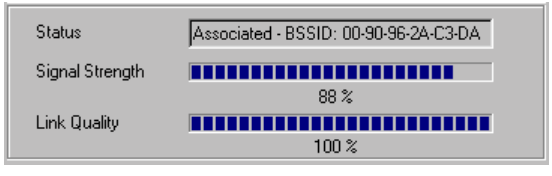


Figure 3-3 Infrastructure Mode Link Status

Statistics

The **Statistics** tab allows you to view the available statistic information, including the **Data Packets**, **Management Packets** and **Rejected Packets**. **Tx** indicates data transmitted whereas **Rx** indicates data received. Optionally you can click the **Reset** button to reset the statistic counters to zero.

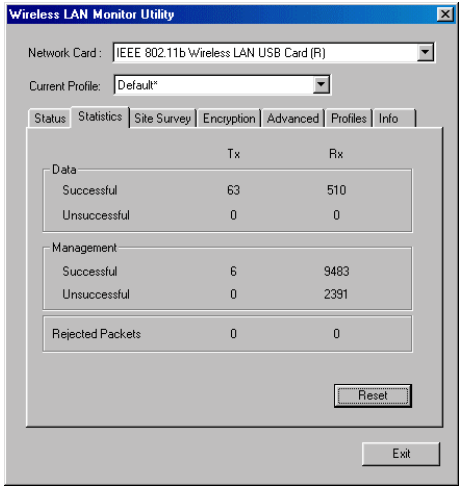


Figure 3-4 Wireless LAN Monitor Utility – Statistics

Site Survey

Site Survey function scans the wireless network searching for available Access Points and wireless stations (Ad-hoc mode) within the range of the card. Available stations are listed with the following information:

BSSID: Basic Service Set ID. It is actually the MAC address of the Access Point/wireless station (Ad-hoc mode). It can be used to identify the stations when they have the same SSID.

SSID: Service Set ID. Displays the current SSID of the Access Point or Ad Hoc network.

Signal: Shows the signal strength ratio. The higher the ration, the more powerful the signal received by your Wireless LAN Card. It helps you optimize the placement of your wireless station when roaming throughout the wireless network environment

Channel: The operating radio channel number.

WEP: Displays if encryption is enabled or disabled on the Access Point/wireless station.

Type: Indicates whether the operating mode is Infrastructure or Ad-Hoc.

Re-Scan: This button allows you to update the list.

Connecting to Desired Site by Site Survey Utility

If you want to connect to any of the Access Point(s) and Ad-Hoc Station(s) listed, double-click on your choice (on the **BSSID** field). The utility will take you back to the **Status** tab showing the parameters of the connection newly established.

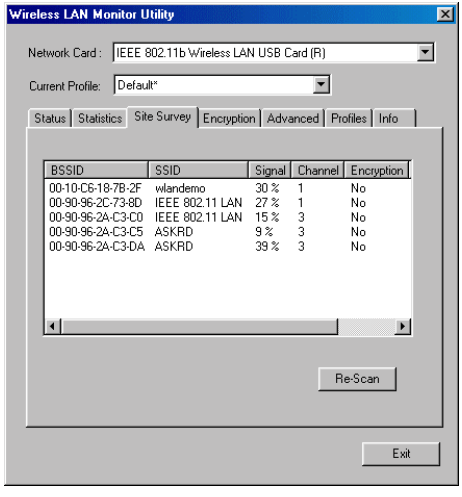


Figure 3-5 Wireless LAN Monitor Utility – Site Survey

Encryption

Encryption technology is used to enhance wireless media security. Your encryption settings must match those used by the Access Points or wireless stations (Ad-hoc mode) in your network, or your computer will be unable to communicate with others through the network.

If you are not going to use encryption, got to the **Encryption** tab and select **Disabled** from the **Encryption** drop-down menu. Yet, if you need to enable encryption, please do the following:

1. Select the **Encryption** tab from the **Wireless LAN Monitor Utility**.
2. Select **64 Bit** or **128 Bit** as your encryption type.
3. For flexibility, you can enter the WEP keys in either **HEX** or **ASCII** format. Enable the preferred format and then enter the key values in the **Key #1-4** fields.

   Note that when using **HEX** format, only digits 0-9 and letters A-F, a-f are allowed. Valid key length for each encryption type is as below:

	HEX Format	ASCII Format
64 Bit	10 hexadecimal digits	5 ASCII characters
128 Bit	26 hexadecimal digits	13 ASCII characters

   Note that the four keys, including the one selected as **Default Key**, are used to decrypt the data you receive.

4. From the **Default Key** list, select one of the four keys to encrypt the data you are going to transmit.

5. In the **Mode** list, select **Mandatory** or **Optional** as required.

   Mandatory: If selected, you need to set the WEP keys to have your station use WEP encryption to communicate with other stations. As a result, any other station within the wireless network will need to use WEP encryption to establish connection with your station.

   Optional: If selected, your station can communicate with other stations within the wireless network regardless if they use WEP or not.

6. Select **Open System**, **Shared Key** or **Auto** as the **Authentication Type**.

   Your authentication type must be the same as those on the Access Point/wireless client (Ad-Hoc mode) with which you want to associate.

7. To have the new settings take effect, click the **Submit**. Then click **Exit** to exit the utility.

Note: To use data encryption, all the wireless stations and/or Access Points must use the same encryption key values. For example, if you use Key #1 on your Wireless LAN Card and a value is assigned, then the same value must be assigned to Key 1 for all other client stations.

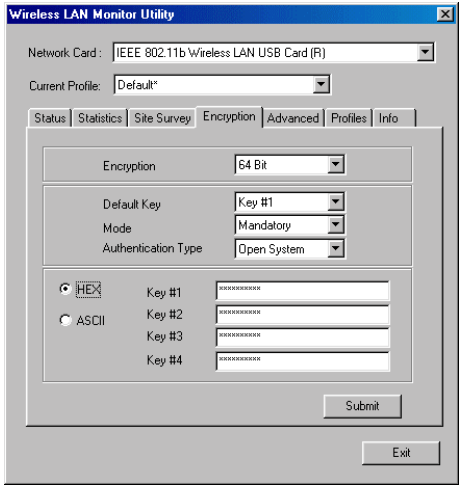


Figure 3-6 Wireless LAN Monitor Utility – Encryption

Advanced

Advanced feature allows you to change advanced configuration settings: **Preamble Type**, **Fragmentation Threshold**, **RTS/CTS Threshold** and **Power Save**.

Preamble Type: The preamble is part of the IEEE 802.11b physical layer specification. All 802.11b devices are mandatory to support the long preamble format, but may optionally support the short preamble. This Wireless LAN Card supports the short preamble. The **Short** option allows to communicate with other 802.11b devices which support short preamble to boost the throughput. The **Long** option is typically used in a "noisy" network. Make sure to use the appropriate preamble type according to your network environment.

Fragmentation Threshold: The fragmentation threshold, which is specified in bytes, determines whether packets will be fragmented and at what size. On an 802.11 wireless LAN, packets exceed the fragmentation threshold are fragmented, i.e., split into, smaller units suitable for the circuit size. Packets smaller than the specified fragmentation threshold value are not fragmented.

RTS/CTS Threshold: When set (in bytes), it specifies the packet size beyond which the Wireless LAN Card invokes its RTS/CTS mechanism. Packets that exceed the specified RTS threshold trigger the RTS/CTS mechanism. The NIC transmits smaller packets without using RTS/CTS.

Power Save: If enabled, your Wireless LAN Card will go the sleep mode and during which data communication will be interrupted. For uninterrupted data communication, you may leave this option blank to disable power saving feature.

Changing the Fragmentation or RTS/CTS Threshold

By default, the Fragmentation and RTS/CTS Threshold are disabled. To change the **Fragmentation/RTS Threshold** parameters, move the slide bar with your mouse, or click on the slide bar and then use the right and left arrow keys of your keyboard to select an exact number.

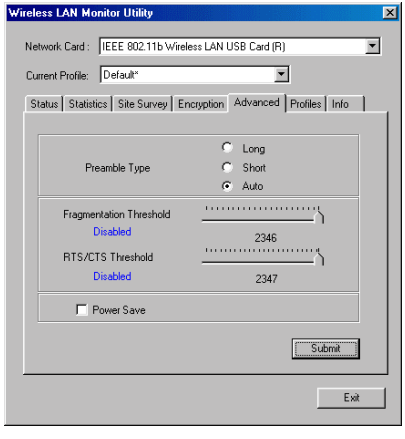


Figure 3-7 Wireless LAN Monitor Utility – Advanced

Profiles

The **Profiles** feature allows you to create multiple profiles to reflect specific WLAN settings for each place you may roam. You can easily retrieve the required profile from the **Current Profile** drop-down list. Selecting a profile from the **Existing profile** list displays the corresponding parameters on the bottom of this tab. To create a new profile, click **New** and then enter the name for the profile. If you need to customize the settings for certain profile, you must select the profile from the **Current Profile** drop-down list, go to the **Status** tab and then click **Change** to change the settings.

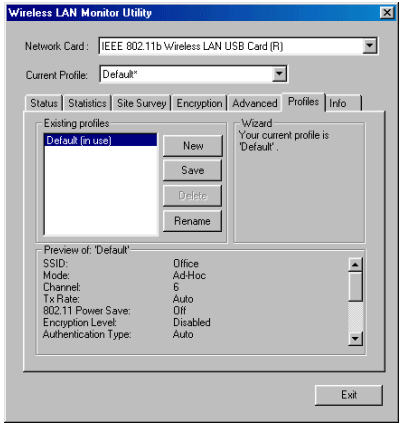


Figure 3-8 Wireless LAN Monitor Utility – Profiles

Info

The **Info** tab displays the basic information about the device, including the Driver, Firmware and Application version and the MAC address of your Wireless LAN Card. Use the **Exit** button if you wish to exit the application.

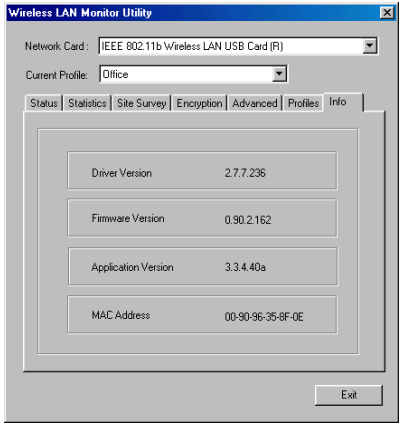


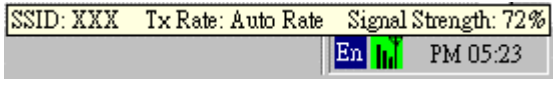
Figure 3-9 Wireless LAN Monitor Utility – Info

Chapter 4 Using Wireless Tray Icon Functions

Viewing Signal Strength and Speed

Whenever you start Windows, the Wireless LAN Monitor Utility is launched automatically with its icon loaded on the system tray, located near the clock on the task bar.

While connected, you can place your cursor over the icon to see the pop-up text that gives link information about the current SSID, speed and signal strength.



Tray Icon Graphic Indication

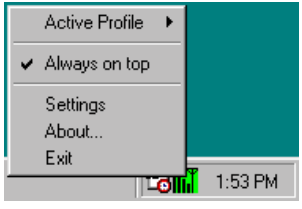
The graphic of the wireless icon changes to indicate your wireless connection quality. The **Wireless LAN Monitor Utility** icon color is green or yellow to indicate whether your Wireless LAN Card is in Infrastructure or Ad Hoc mode respectively. Possible radio connection quality and procedures to take are described in the table below:

Graphic	Signal Strength	Radio Connection Quality
	90-100%	Excellent radio connection Your Wireless LAN Card has an excellent radio connection with the network, allowing excellent network communication at the highest transmit rate.
	60-89%	Good radio connection Your Wireless LAN Card has a good radio connection with the network, allowing normal network communication.
	30-59%	Fair radio connection The radio signal is fair. You can move your device closer to your target Access Point for better signal strength.
	0-29%	Poor radio connection. The radio signal is very weak. Save your profiles and move closer to the target Access Point.

Graphic	Signal Strength	Radio Connection Quality
	N/A	No radio connection If "X" is placed over the icon, radio signal is disabled. It may due to you are out of range of the wireless network, the SSID can not be found or your WEP encryption doesn't match your target Access Point and data frame error occurs. Move your device closer to your target Access Point or verify your SSID or WEP settings.
		Your Wireless LAN Card has been set to operate in Ad Hoc mode.
		Ad Hoc mode is activated and your Wireless LAN Card is resetting or initializing.

Other Functions

Right-clicking the icon displays the context menu as shown below:



Each item on the context menu is described as below:

Active Profile: Displays the current active profile and allows you to switch to another configuration profile.

Always on top: Sets the **Wireless LAN Monitor Utility** window always on top to prevent it from being covered by other windows.

Settings: Pops up the **Wireless LAN Monitor Utility** with the **Status** tab displayed.

About: Pops up the **Wireless LAN Monitor Utility** with the **Info** tab displayed.

Exit: Disables the **Wireless LAN Monitor Utility** and the system tray icon. To re-launch the utility, select **Start** > **Programs > IEEE 802.11b Wireless LAN** > **IEEE 802.11b Wireless LAN Utility**.

Chapter 5 Windows XP Wireless Zero Configuration Utility

Windows XP provides built-in **Wireless Zero Configuration Utility** for wireless configuration and monitor. Windows XP **Wireless Zero Configuration Utility** is enabled by default. When it is active, it will override the management of the **Wireless LAN Monitor Utility**. In this situation, when you open the **Wireless LAN Monitor Utility**, you are only allowed to view the statistics and version information. Configuration fields and buttons are dimmed.

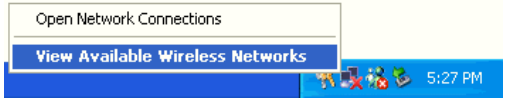
This chapter only provides the essential instructions on using Windows XP wireless utility to get your wireless network established. For more information please refer to Windows XP on-line help.

Note: If you want to disable **Wireless Zero Configuration Utility** and have your Wireless LAN Card managed by the manufacturer's **Wireless LAN Monitor Utility**, please refer to "Note to Windows XP Users" in Chapter 3.

Connecting to an Access Point or Wireless LAN Card

To connect to an existing Access Point/Wireless LAN Card, take out the following steps:

1. Right-click the **Wireless Connection** icon on the system tray and select **View Available Wireless Networks** from the context menu.



Note: Depending on whether your wireless network is established, the context menu may come with different items.

2. When the **Connect to Wireless Network** window pops up, you will see all the Access Points or Wireless LAN Cards that are available in the air. Select the wireless network you want to connect to .

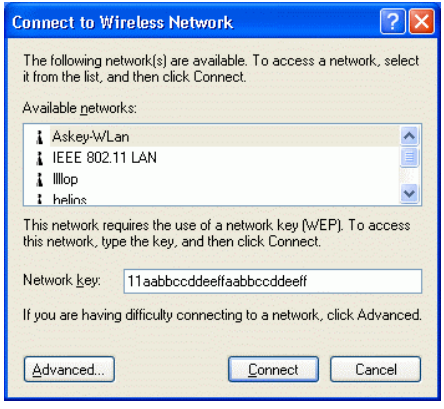
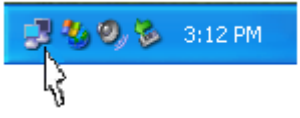

Connect to Wireless Network
The following network(s) are available. To access a network, select it from the list, and then click Connect.
Available networks:
Askey-WLan
IEEE 802.11 LAN
lllllop
helios
This network requires the use of a network key (WEP). To access this network, type the key, and then click Connect.
Network key:
11aabbccddeeffaabbccddeeff
If you are having difficulty connecting to a network, click Advanced.
Advanced...
Connect
Cancel

Figure 5-1 Windows XP Configuration Utility-Connect to Wireless Network

3. If the target Access Point/Wireless LAN Card has been set with WEP key, you must enter the same WEP key in the **Network key** field. Otherwise, leave it blank.

4. Click **Connect**, then you will join the target network and this dialog window will disappear. When your wireless connection is established, the connection icon appears as below:



Note: If the wireless connection can't be established, double-click the connection icon and then click **Properties**. Go to **Authentication** tab first to make sure that you use the correct authentication type for the Wireless LAN Card. For more information, refer to "Authentication" on page 50.

Viewing Wireless Connection Status

After you successfully connect to the Access Point or Wireless LAN Card, double-click the icon in the system tray again. This will open the **Wireless Network Connection Status** window where you can see the general data of the Wireless LAN Card, such as Status, Duration, Speed, Signal Strength, etc.

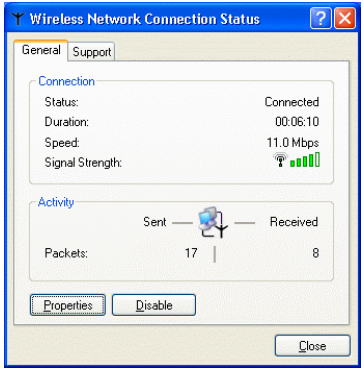


Figure 5-2 Windows XP- Connection Status

Configuring Your Wireless Properties

To configure your wireless properties, open the **Wireless Network Connection Status** window as described above, and then click the **Properties** button. This will open the **Wireless Network Connection Properties** window which allows you to configure more detailed items of the Wireless LAN Card. The following describes each tab of the properties window to help you do more settings of the Wireless LAN Card.

General

This tab allows you to specify the network methods to be used with your Wireless LAN Card. The network policy depends on your wireless network. For TCP/IP protocol, you should configure its properties as instructed by your network administrator. For more information on TCP/IP setting, please refer to “Appendix C Setting Up TCP/IP” on page 69.

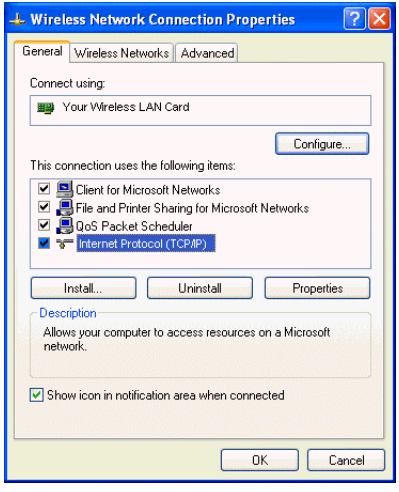


Figure 5-3 Windows XP Connection Properties –General

Wireless Networks

This tab contains two sections: **Available networks** and **Preferred networks** described as below.

Under **Available networks** section, you can also see all the Access Points and Wireless LAN Cards available in the air. Clicking **Refresh** will update the list of Access Points and Wireless LAN Cards.

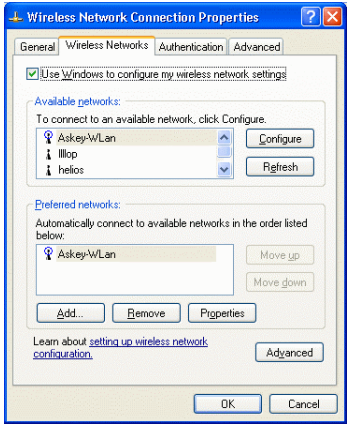


Figure 5-4 Windows XP Connection Properties-Wireless Networks

Under **Preferred networks** section, you can add any wireless networks that you wish to connect to. To do this, just click **Add** to add more Access Points or Wireless LAN Cards to the list.

After you click the **Add** button, the **Wireless Network Properties** window pops up. Type your network name (SSID) and, if needed, the wireless network WEP settings. Once the

Access Point or Wireless LAN Card that you want to connect to has been set with WEP key, you must type the same WEP key as the Access Point's or Wireless LAN Card's.

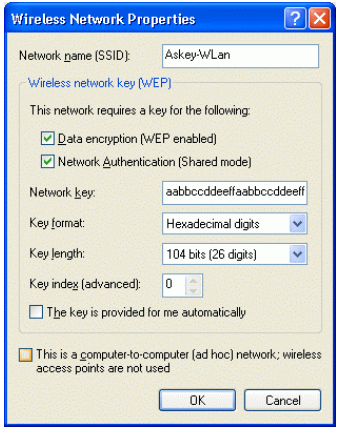


Figure 5-5 Windows XP-Add Preferred Networks

After you add several profiles into **Preferred networks,** you can change the order in which connection attempts to preferred networks are made. Just select the target wireless network and click **Move up** or **Move down** to move it to a desired position.

To Access Certain Wireless Network Only

If you just want to access certain wireless network type, click the **Advanced** button on the **Wireless Networks** tab to open the **Advanced** window. You can choose to connect to the following networks:

- Any available network (access point preferred)
- Access point (infrastructure)
- Computer-to-computer (Peer-to-Peer Group)

The default network type is **Any available network (access point preferred)**. In this network type, your device will connect to any Access Points or Wireless LAN Cards available in the air but Access Point always demands higher connection attempt priority.

Once you finish the advanced setting, your wireless station will then connect to your desired network and the connected network will be listed under **Available networks**.

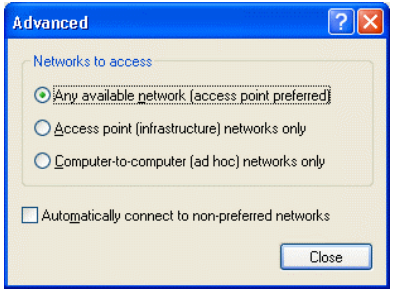
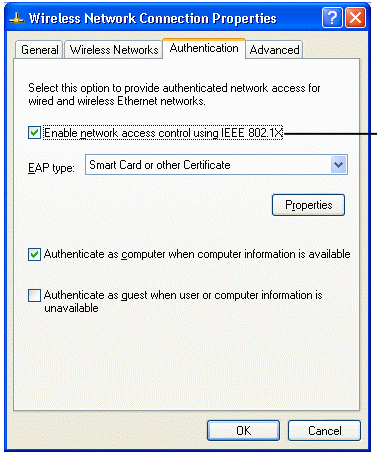


Figure 5-6 Windows XP Configuration Utility-Set up Network to Aceess

Authentication

This tab allows you to configure the authentication settings of your Wireless LAN Card. The most important setting for the Wireless LAN Card is to disable **Enable network access control using IEEE802.1X** to ensure successful connection between the Wireless LAN Cards and Access Points or other Wireless LAN Cards. You must disable this function for any reason. Otherwise, there may be some problems happening during connection. For other settings, we recommend you keep the default settings to minimize the problems during connection.


Wireless Network Connection Properties
General
Wireless Networks
Authentication
Advanced
Select this option to provide authenticated network access for wired and wireless Ethernet networks.
Enable network access control using IEEE 802.1X
EAP type:
Smart Card or other Certificate
Properties
Authenticate as computer when computer information is available
Authenticate as guest when user or computer information is unavailable
OK
Cancel

Make sure to clear the **Enable network access control using IEEE802.1X** check box to ensure successful connection.

Figure 5-7 Windows XP Connection Properties -Authentication

Chapter 6 Uninstalling the Wireless LAN Card

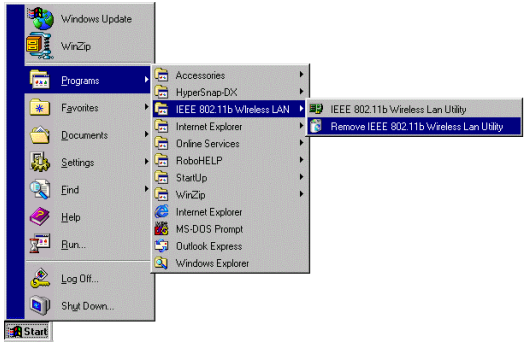
Should you need to uninstall the Wireless LAN Card and application software for any reason,, you should uninstall the associated software and then remove the hardware from your computer. Please proceed as follows.

Uninstalling the Wireless LAN Card Software

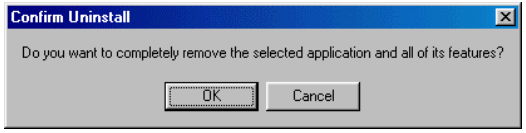
Note: Before uninstalling the Wireless LAN Card software, please disable the utility by right-clicking the utility tray icon and select **Exit** from the context menu. The icon will disappear to indicate that the utility is not in operation.

1. Close all programs that are currently running.

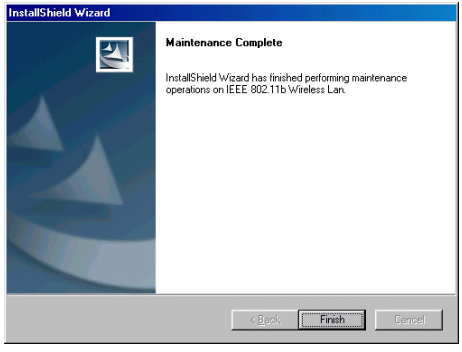
2. Click the Windows **Start** button, point to **Programs**, **IEEE 802.11b Wireless LAN** and then click **Remove IEEE 802.11b Wireless LAN Utility**.



3. Click **OK** to proceed with the software removal procedure.



4. Click **Finish** to complete the software uninstallation.



Removing the Wireless LAN Card

Make sure that you have removed the software before you proceed.

The Wireless LAN Card complies with the **PCMCIA/USB** standard that allows devices to be inserted into and removed from the computer's **PCMCIA** slot/**USB** port when the computer is powered on. For **USB** Wireless LAN Card, just remove the card from your PC's USB port. For **PCMCIA** device, it is recommended that you follow the standard Windows procedure for disconnecting a PCMCIA device from your computer. The following steps assume a Windows 98 environment:

1. On the system tray, right-click the PCMCIA icon, and then click **Adjust PC Card Properties**.
2. Select the Wireless LAN Card which you want to remove, click **Stop**.
3. When the message appears that tells you it is safe to remove device, click **OK** and remove the Wireless LAN Card from the computer.
4. Click **OK** to exit the **PC Card (PCMCIA) Properties** window.

Chapter 7 Updating the Device Driver

Periodically, you may need to upgrade the Wireless LAN Card's driver when a newer version is available. Check our website for information about the latest driver upgrades. When you have finished the download procedure, please follow as below to update the device driver.

1. Uninstall the Wireless LAN Card as described in Chapter 6. Follow the steps to remove the Wireless LAN Card and then uninstall the software.

2. Install the new driver you have downloaded. Refer to Chapter 2 for detailed instructions.

Once you finish installing the new driver, the updating is complete.

Chapter 8 Troubleshooting

Radio Interference

You may be able to eliminate any interference by trying the following:

- Reseat the Wireless LAN Card.
- Increase the distance between the wireless computers and the device causing the radio interference.
- Plug the computer equipped with the Wireless LAN Card into an outlet on a different branch circuit from that used by the affecting device.
- Consult the dealer or an experienced radio technician for help.
- Keep the computer with the Wireless LAN Card away from the microwave oven and large metal objects.

Card Not Detected

If the Wireless LAN Card is not detected by Windows, try the following:

- Make sure the Wireless LAN Card is properly inserted in the **PCMCIA** slot/**USB** port.
- Make sure the **PCMCIA** slot/**USB** port in your computer is working.
- Contact your dealer for additional testing if there is a hardware problem with the Wireless LAN Card.

Cannot Connect to Another Wireless LAN Card

If you cannot make a connection to another Wireless LAN Card from your computer, it could be due to one of the following reasons:

- Incorrect SSID. Make sure the SSID is the same for all computers that have a Wireless LAN Card.
- Changes are not being recognized by your computer. Restart your computer.
- If in Ad Hoc mode, make sure the **Log on to Windows NT domain** check box is not selected in the **Client for Microsoft Networks Properties** dialog box in the **Network Configuration** tab.
- Incorrect IP Address or Subnet Mask. Check these settings in the **TCP/IP Properties** dialog box in the **Network Configuration** tab.

Poor Link Quality

If the Link Quality display stays in the Poor range, it could be due to one of the following reasons:

- Radio interference.
- Distance between Wireless LAN Card and Access Point is too far. Decrease the distance between the Wireless LAN Card and Access Point (or another card).

Cannot Connect to Access Point

If you cannot make a connection to the Access Point, it could be due to one of the following reasons:

- Make sure the Wireless LAN Card and Access Point have no physical connection problems.
- Make sure the SSID for the Wireless LAN Card is the same as the Access Point.
- Make sure the privacy type is the same as that of Access Point. Also, make sure the Default Key is the same for both computers.

Appendix A Limited Warranty

Wireless LAN Hardware

The seller warrants to the end user ("Customer") that this hardware product will be free from defects in workmanship and materials, under normal use and service, for 1 year from the date of purchase from the seller or its authorized reseller. The seller's sole obligation under this express warranty shall be, at the seller's option and expense, to repair the defective product or part, deliver to Customer an equivalent product or part to replace the defective item, or if neither of the two foregoing options is reasonably available, The seller may, in its sole discretion, refund to the Customer the purchase price paid for the defective product. All products that are replaced will become the property of the seller. Replacement products may be new or reconditioned.

Wireless LAN Software

The seller warrants to Customer that each software program licensed from it , except as noted below, will perform in substantial conformance to its program specifications, for a period of 1 year from the date of purchase from the seller or its authorized reseller. The seller warrants the media containing software against failure during the warranty period. No updates are provided. The seller's sole obligation under this express warranty shall be, at the seller's option and expense, to refund the purchase price paid by Customer for any defective software product, or to replace any defective media with software which substantially conforms to applicable seller published specifications. Customer assumes responsibility for the selection of the appropriate application programs and associated reference materials. The seller makes no warranty or representation that its software products will meet Customer's requirements or work in combination with any hardware or software applications products provided by third parties, that the operation of the software products will be uninterrupted or error free, or that all defects in the software products will be corrected. For any third party products listed in the seller software product documentation or specifications as being compatible, the seller will make reasonable efforts to provide compatibility, except where the non-compatibility is caused by a defect in the third party's product or from use of the software product not in accordance with the seller's published specifications or user manual.

Appendix B Regulatory Compliance

FCC Part 15 Declaration of Conformity (DoC)

The following equipment:

Product Name: Wireless LAN Card

is herewith confirmed to comply with the requirements of FCC Part 15 rules. The operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

FCC Rules and Regulations - Part 15

Warning: This device has been tested and found to comply with the limits for a Class B digital device pursuant to Part 15 of the Federal Communications Commissions Rules and Regulation. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try and correct the interference by one or more of the following measures:

- Relocate your WLAN equipped laptop computer.
- Increase the separation between the WLAN equipped laptop computer and other electronics.
- Connect the WLAN equipped laptop computer into an outlet on a circuit different from that of other electronics.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Radiation Exposure Statement

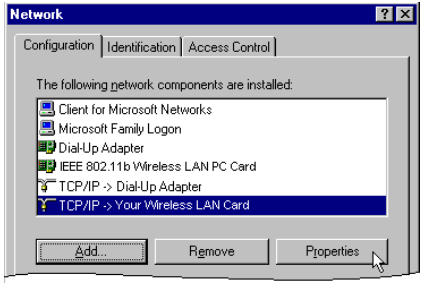
This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance of 20cm between the radiator & your body.

Appendix C Setting Up TCP/IP

This section contains instructions for configuring the TCP/IP protocol of the Wireless LAN Card. The IP address policy depends on your wireless network. You should configure your TCP/IP protocol as instructed by your network administrator.

For Windows 98/ME

1. Double-click the **Network** icon on the **Control Panel**.
2. Click the **Configuration** tab of the **Network** dialog box.
3. In the network components list, select the TCP/IP protocol of your Wireless LAN Card, e.g., **TCP/IP -> IEEE 802.11b Wireless LAN USB Card** and then click **Properties**.



4. On the **IP Address** tab, choose one of the methods as required:

   Option A: Click **Specify an IP address**.

   In the **IP Address** box, enter a valid four-component IP address, either a public or private one as required.

   In the **Subnet Mask** box, enter a valid four-component IP address.

   Then select the **Gateway** tab and enter your gateway information.

   Option B: Select **Obtain an IP address automatically**.

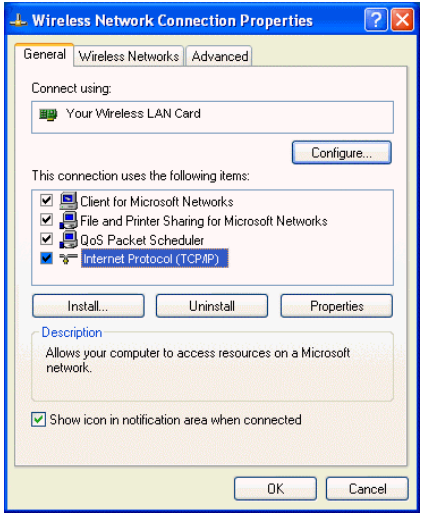
   Then an IP address will be automatically assigned to your computer.

5. Click **OK** to return to **Network** dialog box and click **OK** again to finish configuration. If your TCP/IP properties have been modified, you will be prompted to restart your computer. Click **Yes** to have new settings take effect.

For Windows 2000/XP

1. Double-click **Network Dial-up Connections** (Windows 2000) or **Network Connections** (Windows XP) on **Control Panel**.

2. Right-click the **Local Area Connection** icon corresponding to your wireless adapter (e.g., IEEE 802.11b Wireless LAN USB Card) and click **Properties**.



3. On the **General** tab, highlight **Internet Protocol (TCP/IP)** and then click **Properties**.

   Option A: Use fixed IP address.

   Enable the **Use the following IP Address** option. Enter the **IP address**, **Subnet Mask** and **Default gateway**. Then click **OK**.

   Option B: Use dynamic IP address

   Select **Obtain an IP address automatically**.

4. Close the **Local Area Connection Properties** window. For Windows 2000, if prompted, click **Yes** to restart your computer.

Appendix D Specification

* Specifications are subject to change with notice.

Software

Standards Compliance	● IEEE 802.11 / 802.11b Standard ● PCMCIA v2.1 Standard (WLAN PCMCIA Card) ● USB 1.1 Compliant (WLAN USB Card)
Operation Modes	● Ad-hoc mode ● Infrastructure mode
Security Features	● Support SSID network identification for security ● Support 64-bit and 128-bit WEP Data Encryption and Decryption ● Support Authentication: Open System, Shared Key

Monitor and Configuration	• Reliable and robust monitor and configuration utilities • Dynamic configuration • Network traffic statistics gathering • Clear LED Indicators for real time monitor current network status
Device Driver and Configuration Utility	• A PCMCIA NDIS 5.0 mini-port driver running on Windows 98(SE)/ME/2000/XP platforms(WLAN PCMCIA Card) • A USB NDIS 5.0 mini-port driver running on Windows 98(SE)/ME/2000/XP platforms(WLAN USB Card) • A monitor and configuration utility running on Windows 98(SE)/ME/2000 platform PS: Under Windows XP, use XP built-in monitor and configuration utility.

Hardware

Interface	• One 2.4GHz RF interface for Wireless LAN connection • WLAN PCMCIA Card: One PCMCIA interface • WLAN USB Card: One USB connector

Radio Characteristics	• Frequency Band: 2.400 ~ 2.4835 GHz ISM Band (subject to local regulations)
	• Spreading: Direct Sequence Spread Spectrum
	• Modulation
	  ➢ *CCK: 11Mbps and 5.5Mbps*
	  ➢ *DQPSK: 2Mbps*
	  ➢ *DBPSK: 1Mbps*
	• Number of Channels
	  ➢ *11 Channels (US, Canada)*
	  ➢ *13 Channels (Europe)*
	  ➢ *14 Channels (Japan)*
	• Channel Spacing: 5MHz
	• Data Rate: 11Mbps / 5.5Mbps / 2Mbps / 1Mbps

Radio Characteristics	• Antenna: Two Internal Antennas (WLAN PCMCIA Card) One external antenna (WLAN USB Card) • Transmit Power: 17dBm (typical) (WLAN PCMCIA Card) 17dBm (typical) (WLAN USB Card (R)) 12dBm (typical) (WLAN USB Card (I)) • Receiver Sensitivity: -80dBm @ FER < 8% (WLAN PCMCIA Card) -80dBm @ FER < 8% (WLAN USB Card (R)) -80dBm @ FER < 8% (WLAN USB Card (I))

Power Requirement and Operation Environment Requirement	• Temperature WLAN PCMCIA Card ➢ *Operating Temperature: 0°C to 55°C (32°F to 131°F)* ➢ *Storage Temperature: -10°C to 65°C* WLAN USB Card (R) ➢ *Operating Temperature: 0°C to 55°C (32°F to 131°F)* ➢ *Storage Temperature: -10°C to 80°C* WLAN USB Card (I) ➢ *Operating Temperature: 0°C to 55°C (32°F to 131°F)* ➢ *Storage Temperature: -20°C to 80°C* • Humidity: 5% to 80% (non-condensing) (WLAN PCMCIA Card) 5% to 80% (non-condensing) (WLAN USB Card (R)) 5% to 95% (non-condensing) (WLAN USB Card (I)) • Power Consumption WLAN PCMCIA Card ➢ *Receive mode: 220mA* ➢ *Transmit mode:440 mA* ➢ *Doze mode: TBD*

	WLAN USB Card (R) ➢ *Receive mode: 250mA* ➢ *Transmit mode:420 mA* ➢ *Doze mode: TBD* WLAN USB Card (I) ➢ *Receive mode: 322mA* ➢ *Transmit mode:382 mA* ➢ *Standby mode: TBD* ➢ *Sleep mode: TBD*
LED Indicators (from left to right in front panel)	● Activity (Green) ● Power (Green)
PCMCIA Specification **-WLAN PCMCIA Card**	● PCMCIA v2.1 Standard ● Plug and Play ● Hot Swapping

USB Specification **-WLAN USB Card**	• USB 1.1 Compliant • USB Slave • Plug and Play • Hot Swapping
Physical **-WLAN PCMCIA Card**	• Form Factor: PCMCIA (16-bit) Type II PC Card • PCB Dimensions: 118.20mm (L)×54.00mm (W)×0.76mm (H) • PCB Weight: 46g
Physical **-WLAN USB Card (R)** **-WLAN USB Card (I)**	• Dimensions: 79.52mm (L)×48.00mm (W)×0.80mm (H)
Safety and Regulatory Approvals	• FCC • VCCI • CE • TELEC & JATE

Glossary

10BaseT An IEEE standard (802.3) for operating 10 Mbps Ethernet networks (LANs) with twisted pair cabling and a wiring hub.

Access Point An internetworking device that seamlessly connects wired and wireless networks. Access Points combined with a distributed system support the creation of multiple radio cells that enable roaming throughout a facility.

Ad Hoc A network composed solely of stations within mutual communication range of each other (no Access Point connected).

BSS *Basic Service Se*t. A set of stations controlled by a single coordination function.

Channel A medium used to pass protocol data units that can be used simultaneously in the same volume of space by other channels of the same physical layer, with an acceptably low frame error ratio due to mutual interference.

Encapsulated An Ethernet address mode that treats the entire Ethernet packet as a whole and places it inside an 802.11 frame along with a new header.

an 802.11 frame along with a new header.

ESS *Extended Service Se*t. A set of one or more interconnected Basic Service Sets (BSSs) and integrated Local Area Networks (LANs) can be configured as an Extended Service Set.

Ethernet The most widely used medium access method, which is defined by the IEEE 802.3 standard. Ethernet is normally a shared media LAN; i.e., all the devices on the network segment share total bandwidth. Ethernet networks operate at 10Mbps using CSMA/CD to run over 10BaseT cables.

Gateway A network component that acts as an entrance to another network.

IEEE 802.11 The IEEE 802.xx is a set of specifications for LANs from the Institute of Electrical and Electronic Engineers (IEEE). Most wired networks conform to 802.3, the specification for CSMA/CD-based Ethernet networks or 802.5, the specification for token ring networks. 802.11 defines the standard for wireless LANs encompassing three incompatible (non-interoperable) technologies: Frequency Hopping Spread Spectrum (FHSS), Direct Sequence Spread Spectrum (DSSS), and Infrared. IEEE standards ensure interoperability between systems of the same type.

Infrastructure A wireless network centered about an Access Point. In this environment, the Access Point not only provides communication with the wired network but also mediates wireless network traffic in the immediate neighborhood.

IP *Internet Protocol*. The standard protocol within TCP/IP that defines the basic unit of information passed across an Internet connection by breaking down data messages into packets, routing and transporting the packets over network connections, then reassembling the packets at their destination. IP corresponds to the network layer in the ISO/OSI model.

IP Address An IP address is a 32-bit number that identifies each sender or receiver of information sent across the Internet. An IP address has two parts: the identifier of a particular network on the Internet and an identifier of the particular device (which can be a server or a workstation) within that network.

ISP *Internet Service Provide*r. An organization that provides access to the Internet. Small ISPs provide service via modem and ISDN while the larger ones also offer private line hookups (T1, fractional T1, etc.).

LAN *Local Area Networ*k. A communications network that serves users within a defined geographical area. The benefits include the sharing of Internet access, files, and equipment, such as printers and storage devices. Special network cabling (10BaseT) is often used to connect the PCs together.

NAT *Network Address Translatio*n. The translation of an Internet Protocol address (IP address) used within one network to a different IP address known within another network. One network is designated the internal network and the other is the external. The internal network then appears as one entity to the outside world.

Radio Frequency *R*F, Terms: GHz, MHz, Hz —The international unit for measuring frequency is Hertz (Hz), equivalent to the older unit of cycles per second. One megahertz (MHz) is one Million-Hertz. One giga hertz (GHz) is one Billion-Hertz. The standard U.S. electrical power frequency is 60 Hz, the AM broadcast radio frequency band is 0.55–1.6 MHz, the FM broadcast radio frequency band is 88–108 MHz, and wireless 802.11 LANs operate at 2.4GHz.

SSID *Service Set I*D. A group name shared by every member of a wireless network. Only client PCs with the same SSID are allowed to establish a connection.

Subnet Mask A value that defines whether your computer communicates only within your LAN or communicates outside of your LAN, where it is routed out to the rest of the Internet. A Subnet Mask that has the same first three components (for example, 255.255.255.0) is the routing pattern for a Class C address.

TCP *Transmission Control Protoco*l. The standard transport level protocol that provides the full duplex, stream service on which many applications' protocols depend. TCP allows a process on one machine to send a stream of data to a process on another. Software implementing TCP usually resides in the operating system and uses the IP to transmit information across the network.

WEP *Wired Equivalent Privac*y. The optional cryptographic confidentiality algorithm specified by 802.11. The algorithm is being used to provide data confidentiality that is subjectively equivalent to the confidentiality of a wired LAN medium that does not employ cryptographic techniques to enhance privacy..